

REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks. Claims 1-19 are pending.

Claims 1-18 have been amended to overcome the objections cited in the Office Action and to better define the subject matter Applicant regards as the invention. Support for the features recited in the amended claims is provided by the original claims.

New Claim 19 recites a feature taken from Claim 3.

35 USC §112

Claim 1 has been amended to recite a command member. It is respectfully submitted this is supported by Claim 7. Claims 2 and 4 have been amended consistent with this amendment to Claim 1. It is noted that the changing of “command members” to “command member” in Claims 2 and 4 does not limit the invention of Claim 2 to only one command member. Claim 9 has been amended to change piston to actuator. Claim 10 has been amended to depend from Claim 6 to provide antecedent basis for “said pipes”. Claims 12, 17 and 18 were amended to be clearer. Claim 15 was amended to change piston to actuator.

35 USC §103(a)

Claims 1-4, 6, 11, 12, and 16-18 were rejected, under 35 USC §103(a), as being unpatentable over US 4,244,123 to Lazure et al. (hereinafter “Lazure”). Claim 5 was rejected, under 35 USC §103(a), as being unpatentable over Lazure in view of US 6,200,176 to Bowers (hereinafter “Bowers”). Claims 7-10 and 13-15 were rejected, under 35 USC §103(a), as being unpatentable over Lazure in view of US 3,748,857 to Heiser (hereinafter “Heiser”). Applicant

respectfully traverses these rejections.

The present invention of amended claim 1 includes a valve means connected to detection means and able to act on a command member, of a variable delivery feed pump, which controls delivery of the variable delivery feed pump to reduce the hydraulic delivery of the variable delivery feed pump in the event that the pressure measured exceeds the pre-determined pressure value. A “variable delivery pump” is also known as a “variable displacement pump”. These are terms of art (See ATTACHMENT I, Caterpillar's New Variable Delivery Hydraulic Pump-Brief Article).

The Office action may be misconstruing the term “delivery” in the claims. In the context of the present application the term “delivery” means the amount of oil discharged by the pump for every turn or cycle of a drive shaft which drives the pump. In a hydraulic system a variable delivery pump can change the amount of hydraulic oil it discharges for every turn of the drive shaft. The present invention controls the delivery of the pump to reduce the delivery if a measured pressure exceeds a predetermined amount. Lazure does not teach or suggest this.

In contrast to the present invention, Lazure does not control the delivery of its pump. Lazure discharges (delivers) oil from its pump 133 and sends all of its discharged oil through a selector 137 which recirculates a portion of the oil back to the fluid tank 131 and sends a remainder portion of the oil to a flow control valve 139. Discharging a constant amount of oil from a pump 133 and then increasing the recirculated portion of discharged oil to reduce the remaining amount of oil available to pass through the flow control valve 139 and then reach a hydraulic piston 65 is not reducing the “delivery” of the pump.

It is respectfully submitted the secondary references to Bowers and Heiser do not make up for the deficiencies of Lazure.

Thus, Lazure, neither alone nor combined with Bowers or Heiser, fails to suggest the feature recited in claim 1 of a valve means able to reduce the hydraulic delivery of oil by a feed pump in the event the measured oil pressure within a hydraulic circuit connecting the feed pump and motor exceeds a pre-determined pressure.

Moreover, the Office action acknowledges that Lazure does not disclose this feature (Office Action page 5, lines 1-2). To overcome the deficiencies of Lazure's disclosure, the Office Action proposes it would have been obvious to a skilled artisan to use the pressure gauge and flow control valve disclosed by Lazure to control any aspect of a machine where one desires to detect a particular parameter and adjust the values of that parameter within a desired range (page 5, lines 3-6). More specifically, the Office Action proposes that just as Lazure teaches that the attitude or depth of a machine may be controlled via detecting gauges and valves interacting with hydraulic pumps, it would be obvious to a skilled artisan to use these same methods to vary any aspect of the invention, such as the delivery of an item being laid (page 5, lines 6-10).

However, the Office Action's rationalization in support of the conclusion of obviousness addresses, at best, only two of the three requirements necessary to establish a *prima facie* case of obviousness. It is well settled that to establish a *prima facie* case of obviousness, three basic criteria must be met (MPEP §2143, first sentence). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings (MPEP §2143, second sentence). Second, there must be a reasonable expectation of success (MPEP

§2143, third sentence). Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations (MPEP §2143, fourth sentence).

The Office Action's remarks only expressly address the reason a skilled artisan would be motivated to modify Lazure's structure to produce variants that may be applied to different functional operations. Although not expressly stated, the Office Action appears to conclude a skilled artisan would have a reasonable expectation of success in producing such modifications based on Lazure's disclosure. Assuming, *arguendo*, a skilled artisan would be spurred to innovate with respect to Lazure's teachings and that some innovations produced thereby could be achieved with a reasonable expectation of success, these two factors do not provide the teaching or suggestion to make the specific structure recited in claim 1.

Accordingly, the Office Action has not met the requirements for establishing a *prima facie* case of obviousness, since no reasonable basis may be derived from the evidentiary record for concluding the Lazure suggests all of the limitations recited in claim 1.

Independent claim 11 similarly recites a feature distinguishing apparatus claim 1 from Lazure, but with respect to a method. For the same reasons this feature distinguishes claim 1 from Lazure, alone or with the secondary references, so too does it distinguish claim 11.

Applicant provides the following discussion to further distinguish the invention from the applied references and convey a better understanding of the invention.

Applicant respectfully submits the field of application, the purposes, the technical problem and the solution to which the present application and the patent to Lazure are directed are completely different.

Lazure discloses a guidance device in which a hydraulic circuit is employed for driving a couple of hydraulic cylinders (65, 71), the first (65) of which is used to raise or lower a plow and the second (71) of which is used to tilt the plow.

Therefore, in contrast with the present application, the Lazure patent is not involved in the continuous control of the oil pressure in the hydraulic circuit, which pressure is directly influenced by the reaction of the cables which have to be laid (see for example page 2, lines 4-14), in which such reaction may cause overpressure and therefore damage to the laying apparatus.

It could be said, as a general matter, that the control system disclosed in Lazure is directed to the correction of a working position, whereas the control system in the present application is a safety control able to maintain in each situation the correct hydraulic working condition and the correct values of the pressure of the oil in the circuit.

To obtain such a complete different purpose, Lazure discloses a hydraulic circuit used to drive the hydraulic cylinders (65, 71) to modify the position or the attitude of the plow according to an external input which comes either from a manual setting made using a control panel (103, 113) or from an external receiver (85, 87) (see description on column 7, lines 57-61 or column 8, lines 4-7).

In other words, in Lazure the correction signals which act on the pump (133, 149) to modify the pressure of the fluid, and therefore to drive the cylinders (65, 71), come from electro-hydraulic systems which are external and different from the primary power circuit and perform the regulation action as a consequence of a detected variation of an external parameter (in this case the variation of the depth or of the tilting angle of the plow). Lazure uses the hydraulic

circuit comprising the hydraulic cylinders (65, 71) to correct the depth and/or the position of the plow (see column 6, lines 3-18) when a deviation from a set position has been detected by external detection systems (i.e. the receivers 85, 87).

Moreover, Lazure employs a selector (137) similar to a "limit valve" of the known hydraulic systems (from page 1, lines 29 to page 2, line 3 of the specification).

In contrast, the present invention continuously detects and automatically corrects the oil pressure in the primary power hydraulic circuit by means of a self-regulating system in which the signal which adjusts the primary circuit is generated by a variation of the condition of the primary circuit itself.

For example as discussed above, an embodiment of the hydraulic circuit disclosed in the present application comprises a variable delivery pump (17) (page 5, lines 29, 30) and a command element (22) acting on the pump (17) to adjust the oil flow (and thus pressure) delivered by the pump (page 6, lines 16-19).

The circuit also comprises a sensor (32) which detects the value of the oil pressure and sends it to a processing unit (33) to compare it with a limit pressure value (from line 27 of page 7 to line 18 of page 8) and to drive a valve (35, 37) which in turn acts on the command element (22) of the pump (17) to reduce the delivery of the pump.

From the above it is clear the hydraulic circuit disclosed in the present application is self-regulating in the sense that a change in the condition of the pressure in the primary power circuit entails automatically a correction in the delivery of the pump (17) to restore the correct oil pressure itself.

It is clear that the behavior of the hydraulic circuit of the present application is completely different from that disclosed in Lazure, in which an external position system commands a pump to restore a correct working position of a digging tool.

Conclusion

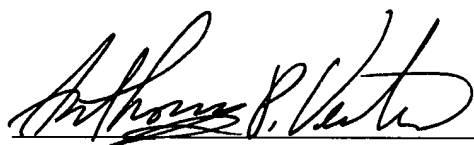
In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

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APV/DWW

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